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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/669,382	09/26/2000	Kevin Lynaugh	80113-0070	3376

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EXAMINER	
WEST, JEFFREY R	

ART UNIT	PAPER NUMBER
2857	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/669,382	Applicant(s) LYNAUGH ET AL.
	Examiner Jeffrey R. West	Art Unit 2857

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 March 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,5-14 and 22-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 2, 5-7, 10-13, 22, 23, and 25* is/are rejected.

7)☒ Claim(s) *8,9,14 and 24* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 September 2000* is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 2, 5, 10, 22, and 25 rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,131,023 to Matsuura in view of U.S. Patent No. 5,452,473 to Weiland et al. and further in view of U.S. Patent No. 5,469,115 to Peterzell et al. and U.S. Patent No. 6,285,960 to Fung et al.

Matsuura teaches a set-top cable modem device including a cable modem comprising a receiver unit, tuner, and automatic gain control circuit (column 5, line 66 to column 6, line 6 and column 6, lines 4-29). Matsuura also teaches, in operation, using an analog IF signal and a baseband signal for demodulating a received signal wherein the automatic gain control circuit is controlled by the demodulation operation (column 8, lines 45-58) according to the input level of the QAM input signal supplied to the automatic gain control circuit (column 11, lines 50-55).

Matsuura therefore teaches the general structure of a cable modem device used to perform demodulation, but does not provide any method for calibrating or insuring accurate operation of the demodulation device.

Weiland teaches reverse link, transmit power correction and limitation in a radiotelephone system comprising a receiver that includes a linearizer table (i.e. look-up table) stored in the device that, during factory calibration, receives and stores a plurality of calibration signals having known frequencies, input RF power values, and error control values for use in actual operation (column 3, lines 46-65) wherein the error values are determined by an automatic gain control circuit (column 3, line 66 to column 4, line 5). Weiland also teaches using the linearizer look-up table, containing the aforementioned frequency and power parameters, to obtain correct input power adjustments required for the radio receiver's demodulation operation (column 3, lines 26-40).

It would have been obvious to one having ordinary skill in the art to modify the invention of Matsuura to include a method for calibrating the demodulating process, specifically using a linearizer look-up table, as taught by Weiland, because, as suggested by Weiland, the combination would have provided a method for removing error in receiving and transmitting functions (column 3, lines 57-61) and controlled the process to insure that the output power remains within a required range (column 2, lines 31-41).

Although the combination of Matsuura and Weiland teaches using a linearizer look-up table to determine an input power adjustment value instead of the actual power value itself, these methods are considered to be functionally equivalent since the combination of Matsuura and Weiland uses the correction value to obtain the actual power value. Also, since it is well-known in the art that look-up tables present

a clear relationship between a set of stored values in order to obtain a desired output from corresponding known inputs, it would have been obvious to one having ordinary to use the look-up table of Matsuura and Weiland to obtain any desired output by reading in the necessary inputs.

As noted above, the combination of Matsuura and Weiland teaches many of the features of the claimed invention. The combination, however, does not specifically teach specifying that the error-controlling signal of the automatic gain controller be an accumulated error value output by an integrator or interpolating the data in the linearizer look-up table.

Peterzell et al. teaches a method and apparatus for automatic gain control in a digital receiver wherein the automatic gain control apparatus includes a saturating integrator that compares a received power signal to a reference signal and produces the gain control signal by integrating or by refraining from integration based upon the reference values (column 2, lines 37-49) wherein the integrator includes an error accumulator (column 10, lines 11-21).

Fung teaches a method and apparatus for a router line card with adaptive selectable gain control for use in a cable environment (column 5, lines 31-35) wherein actual calibration data is stored a memory along with a nominal adjustment value and non-nominal adjustment values are interpolated and extrapolated using each of the known nominal adjustment values (column 2, lines 45-67).

It would have been obvious to one having ordinary skill in the art to modify the invention Matsuura and Weiland to include specifying that the error-controlling signal

of the automatic gain controller be an accumulated error value output by an integrator, as taught by Peterzell, because, as suggested by Peterzell, the combination would have provided an apparatus, similar to that of Matsuura and Weiland, for implementing automatic gain control that would have allowed inexpensive control of received signal power over a wide dynamic range (column 2, lines 25-30).

It would have been obvious to one having ordinary skill in the art to modify the invention of Matsuura and Weiland to include interpolating the values of the linearizer look-up table, as taught by Fung, because Fung suggests a method for estimating the needed adjustment values for inputs that do not have an actual nominal stored calibration value, therefore allowing adjustment of a wider variety of input parameters (column 9, lines 53-67).

3. Claims 13 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuura in view of Weiland, Peterzell, and Fung, and further in view of U.S. Patent No. 5,027,376 to Friedman et al.

As noted above, Matsuura in combination with Weiland, Peterzell, and Fung teaches all of the features of the claimed invention except for specifying that the data in the look-up table be stored as 8-bit data.

Friedman teaches a data telecommunications system including a modem (column 5, lines 62-66) and a memory storing a plurality of tables including a

frequency table (column 6, lines 59-68). Friedman also teaches storing data in the table in 8-bit form (column 7, lines 5-10).

It would have been obvious to one having ordinary skill in the art to modify the invention of Matsuura, Weiland, Peterzell, and Fung to include specifying that the data in the look-up table be stored as 8-bit data, as taught by Friedman, because the combination would have provided a functionally equivalent method for storing data in a table and, as suggested by Friedman, increased the speed of look-up and data transmission due to smaller groupings of bits (column 6, lines 22-26 and column 7, lines 2-5)

4. Claims 6, 7, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuura in view of Weiland, Peterzell, and Fung, and further in view of U.S. Patent No. 6,539,128 to Lee et al.

As noted above, Matsuura in combination with Weiland, Peterzell, and Fung teaches many of the features of the claimed invention and while the combination does teach interpolating and extrapolating data in a table using/at each of the known data points, the combination does not specify what type of interpolation/extrapolation to perform.

Lee teaches a method and apparatus for performing interpolation between two points of known data (column 2, lines 5-10). Lee also teaches the well-known interpolation methods of linear interpolation (i.e. first-order) and quadratic interpolation (i.e. second order) (column 1, lines 8-67).

It would have been obvious to one having ordinary skill in the art to modify the invention of Matsuura, Weiland, Peterzell, and Fung to include specifying performing first or second order interpolation, as taught by Lee, because while the combination of Matsuura, Weiland, Peterzell, and Fung is silent on the type of interpolation to perform Lee suggests two well-known interpolation methods, applicable in the noted combination, that would have allowed the user to choose between fast linear interpolation or slower, more accurate, second-order interpolation, as desired (column 1, lines 60-64).

Although the combination of Matsuura, Weiland, Peterzell, Fung, and Lee doesn't specifically disclose performing extrapolation using linear projection, since the combination does teach performing interpolation and extrapolation and also teaches that the interpolation be linear, one with ordinary skill in the art would also perform linear extrapolation (i.e. linear projection) in order to obtain similar corresponding results.

Claim Objections

5. Claims 8, 9, 14, and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims because none of the cited prior art teaches or suggests interpolating the frequency, input power, and accumulated error values using an audio tone or a known voltage variable amplifier

curve or scaling the 8-bit look-up table calibration data using maximum and minimum values for frequency and input power level.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

U.S. Patent No. 5,129,098 to McGirr et al. teaches a radio telephone using received signal strength in controlling transmission power comprising a modulator, automatic gain control circuit, and a look-up table containing actual calibration data and correction values corresponding to measured input signal strength and frequencies.

U.S. Patent No. 5,722,056 to Horowitz et al. teaches a radio transmitter with a power amplifier linearizer look-up table wherein data is added to the table by linear interpolation.

U.S. Patent No. 5,315,380 to Ingraham et al. teaches an apparatus and method for transforming the digital representation of a color input image including a look-up table of data and a scaler that creates the look-up table with outputs ranging from a global minimum to a global maximum.

U.S. Patent No. 6,240,551 to Webb et al. teaches a satellite broadcast video picture improving apparatus and method for use in a set-top box system comprising an 8-bit look-up table containing correction values.

U.S. Patent No. 4,829,380 to Iadipaolo teaches a video processor including a normalizing circuit that normalizes received data over its entire dynamic range according to maximum and minimum values.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey R. West whose telephone number is (703)308-1309. The examiner can normally be reached on Monday through Friday, 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (703)308-1677. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7382 for regular communications and (703)308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

MARC S. HOFF
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

jrw
May 19, 2003